



Global Bureau,  
Office of  
Agriculture and  
Food Security

# POLICY SYNTHESIS

*for Cooperating USAID Offices  
and Country Missions*  
(<http://www.aec.msu.edu/agecon/fs2/psynindx.htm>)

Number 57

October 2001



USAID/Mali and  
Africa Bureau  
Sahel Regional Program



## PRELIMINARY FINDINGS ON THE LINKAGES BETWEEN AGRICULTURAL PRODUCTIVITY GROWTH AND CHILD NUTRITIONAL STATUS IN MALI<sup>1</sup>



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by

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**BACKGROUND:** USAID/Mali, through the Food Security II Cooperative Agreement with the Department of Agricultural Economics of Michigan State University (MSU), is supporting research and outreach activities aimed at strengthening the links between agricultural productivity growth and improved child nutritional status in Mali. A key focus of the work is on understanding how income growth resulting from increased agricultural productivity interacts with non-income factors to affect child nutritional status. This work is being jointly implemented by MSU, the Institut du Sahel (INSAH) and the Malian Ministry of Health. One of the aims of the project is to strengthen the capacity of the

Ministry's newly created Food and Nutritional Monitoring Division (DSSAN) to carry out multi-disciplinary studies to monitor and identify ways of improving child health and nutrition in the country. This paper summarizes some of the preliminary findings of this ongoing work. Summaries of earlier findings and a description of the project are available at:

<http://www.aec.msu.edu/agecon/fs2/malinut/index.htm>

Future research will include the study of opportunities for and processes required to create an integrated, multi-sectoral, community-based approach to improving nutrition.

<sup>1</sup> This project is being coordinated jointly by Michigan State University, the Institut du Sahel (INSAH/CILSS), and the Division Suivi de la Situation Alimentaire et Nutritionnelle (DSSAN) of the Cellule de Planification et de Statistique (CPS) in the Ministère de la Santé (MS). Other collaborators include the Institut d'Economie Rurale (IER), the Direction Nationale de la Statistique et de l'Informatique (DNSI), and the Compagnie Malienne pour le Développement des Textiles (CMDT). Financing is provided by USAID/Mali through the Food Security II Cooperative Agreement managed by USAID's Global Bureau (G/EGAD/AFS).



**FINDINGS: Has Malnutrition Worsened in Mali?**

In 1996, the results of the second Demographic and Health Survey (DHS II) in Mali showed that rates of child malnutrition had worsened since the first survey (DHS I) in 1989. This announcement, coming at a time of strong economic growth following the devaluation of the CFA franc, focused the government's and development community's attention on the reasons underlying this seeming paradox. In the first phase of USAID/MSU/INSAH/Ministry of Health's project on the Linkages between Agricultural Growth and Improved Child Nutrition in Mali, analysis of available data showed that 1) differences in the samples used in DHS I and II (rural/urban mix, age distribution of children, month of data collection) make them difficult to compare and thus conclude that child malnutrition has increased; and, 2) contrary to popular perception, agricultural growth has actually been quite variable over the last ten years, concentrated primarily in the cotton and rice sectors and generated by a relatively small percentage of better equipped farmers using improved farming practices. Although aggregate national cereal production covers Mali's estimated food requirements, well over half of rural households still do not produce sufficient food to meet their needs. Their food security depends on regular access to income and proper functioning markets that supply food at affordable prices throughout the year.

Even if households have the means to produce or purchase food, children's dietary intake is ultimately determined by the family's and primary caregiver's desire to obtain and use foods to meet their nutritional needs. Children's health also has a major effect on their nutritional status and is affected by their exposure and susceptibility to disease and the care provided to them.

Although children's nutritional status may not have actually worsened over the last fifteen years, there is little disagreement over the fact that child malnutrition remains a serious problem in Mali. Improving child nutrition depends on both agricultural productivity growth that generates higher real incomes and regular access to food, and integration of nutritional interventions (to strengthen proper feeding and care giving practices) in the package of basic services offered by community health centers. Neither higher income nor improved practices can by themselves lead to a sustainable improvement in children's nutrition.

**Household-level Factors Affecting Nutritional Status.** Preliminary analysis of data collected in the first stage of the qualitative component of the study (based on a limited sub-sample) focusing on feeding and care practices and mothers' time allocation suggests that numerous factors other than higher household income play a determining role on children's nutritional status:

- a. Few mothers practice exclusive breast-feeding in the first 4-6 months of their child's life, contrary to the Ministry of Health's and UNICEF's recommended practices.
- b. Introduction of supplementary foods, particularly watery cereal-based porridge, prior to 4-6 months of age, reduces the frequency of breast-feeding and may contribute to higher rates of malnutrition.
- c. Many children do not begin receiving supplementary foods, however, until well after the recommended six months.



- d. The paternal grandmother often has a major role in determining child feeding and care practices, especially in households with younger mothers.
- e. The quality of care given to a child including feeding practices, sanitary environment and hygiene depends on who the caregiver is and the ability of the mother to control the care and feeding practices. In many households, older sisters, grandmothers and mother's co-wives spend considerable time caring for her children.
- f. The effect of mothers' domestic and agricultural tasks on the care provided to child also depends on the availability of surrogate caregivers and the quality of their care.
- g. A lack of income to purchase nutritionally rich food appears to be a major factor, in addition to cultural rules, that determines the ability of households to provide nutritionally rich supplementary foods to a child.
- b. These programs cannot neglect the role played by surrogate caregivers, particularly grandmothers, in many areas of Mali.
- c. Increasing family income, particularly of the primary caregiver, is an essential component of any strategy to make sustainable improvements in child nutrition. Families find it hard to improve the quality of supplementary foods when they do not have the purchasing power to buy nutritionally rich and diverse food products. Given that the majority of income earning opportunities in rural Mali are directly or indirectly linked to a dynamic agricultural sector, efforts must be strengthened to establish the necessary conditions required for greater productive investment needed to increase productivity and rural incomes.

These initial findings confirm results of similar studies conducted in Mali on feeding and care practices. While the relative importance of these factors to children's nutrition will become clearer when analyzed with data from subsequent rounds of this qualitative study and an on-going weekly income-expenditure-anthropometrical survey, these preliminary findings draw attention to several issues:

- a. Nutritional programs in community health centers must refocus efforts on reinforcing good care and feeding practices while seeking to improve the use of basic practices recommended by the Ministry of Health.

Statistical analysis of the DHS data shows correlation of both increased mother's and father's education with improved child long-term nutritional status, as measured by height-for-age. Initial cross-country analysis of 10 DHS studies for several West African countries appears to suggest that fathers' educational level (likely correlated with household income) may be somewhat more important in the poorest countries, while maternal education may have a greater effect in countries with slightly higher per capita incomes. One potential explanation is that paternal income/education is important in helping raise living standards to a point where the family can meet minimum caloric levels. In countries where basic needs are more secure, maternal education is (relatively) more important in influencing the composition of diet and use of health care. In any case, this finding reinforces the



suggestion of other studies that nutrition education messages need to be targeted at several family members, not just mothers.

The cross-country work also shows that holding wealth and other factors constant, mothers with a healthier upbringing, who are subsequently taller, have healthier, better nourished children. This suggests an important intergenerational effect and a long-term payoff to efforts to increase access to food and nutrition education. The discouraging news is that there is no evidence that mothers' nutritional status has improved over the past generation in West Africa; average height-for age has stagnated or declined in most of the DHS West African countries.

**Community-level Factors Affecting Nutritional Status.** Preliminary findings from the community component of the study also highlighted the importance of higher incomes for increasing the effective demand for health care services. Broad-based demand for cost-recovery health care is essential to the financial viability of community health centers.

Over the last five years, the Ministry of Health and development partners have focused human and financial resources on expanding the availability of community health care throughout Mali, building and equipping new clinics. Community health centers have initially focused most of their efforts on providing curative services and improving immunization coverage. There has been relatively less attention given to the preventive and promotional components (i.e., nutrition) of the basic package of health care services advocated by the Ministry of Health. Most nutrition interventions have been implemented through short-term, donor-financed projects focused on

feeding and care practices, micronutrients, vaccinations and child illness. While often obtaining good results, these actions have had limited success in institutionalizing the processes required to sustainability integrate nutrition interventions into the basic package of health services.

Finding sustainable financing mechanisms to pay for nutrition interventions implemented by community health centers presents a major challenge to Mali's health system. It is highly unlikely in the short term that families and caregivers will be willing and able to pay for nutritional services or that the Ministry of Health could expand central funding to community health centers. The most promising financing option would appear to be for rural communes to use their local fiscal authority and development mandate to develop a sustainable tax system to pay for these interventions. Implementing this type of system depends, however, on a dynamic rural economy capable of generating broad-based income growth that is prerequisite for an expanded tax base.

\*Work for this summary was conducted under the Food Security II Cooperative Agreement (PCE-A-00-97-00044-00) between Michigan State University and the United States Agency for International Development, through the Office of Agriculture and Food Security in the Economic Growth Center of the Global Bureau (G/EGAD/AFS). Supplemental funding for this research was also provided to the FS II Cooperative Agreement by USAID/Mali.

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